Students in Science

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https://www.navo.navy.mil

Oceanographic Surveyors: What Do They Do?

The underwater realm is as varied as the realm above it. In fact, some may argue the area underwater is even more varied. Beneath the surface is a complicated world of mountains, valleys, rivers and volcanoes, complex chemical processes and innumerable ecosystems rich in biodiversity.

Because all these features, processes and beings are generally unseen by the people who need this information most until it is too late, they rely on the information collected by oceanographers at the Naval Oceanographic Office (NAVOCEANO) to assist in successful mission-planning and execution.

Oceanographers who operate the oceanographic systems on NAVOCEANO's ships at sea to learn about the ocean's processes and features are called oceanographic surveyors. Aboard the ship, the civilian and military surveyors take "pictures" of the seafloor with pulses of sound called sonar. These pulses combine to create images of the undersea world. The sound reflects off submerged objects back to the surface and is recorded by equipment, giving oceanographers a picture of the size and shape of objects on the seafloor. Sonar can tell the difference between natural ocean floor features like rocks, which generally have smooth rounded edges, and manmade objects like sunken ships, which generally have sharp defined edges.

In addition to the seafloor, they also study the amount of salt dissolved in water (salinity), water temperature, clarity and many other characteristics, which affect water's buoyancy, conductivity and the way the water transmits sound.

Knowing all they can about the ocean and what lies beneath its surface helps sailors aboard ships and submarines safely navigate the world's waters and allows the seafarers to use the water to their advantage. Equipping all warfighters with the proper knowledge ensures they are able to safely and effectively complete their mission and, thus, protect the safety of American citizens.

Did you know...

- Only 5 percent of the ocean floor has been surveyed with the same precision as the moon's surface?
- NAVOCEANO celebrated its 175th anniversary on December 6, 2005?
- NAVOCEANO has the world's largest oceanographic library?
- The supercomputing center at NAVOCEANO is ranked as one of the top 10 in the world?

Visit
Neptune's Web
http://pao.cnmoc.navy.mil

Book your next field trip to StenniSphere at Stennis Space Center, where you can learn even more about oceanography and meteorology! Call 1-800-237-1821.

About the Naval Oceanographic Office

NAVOCEANO, comprised of approximately 1,100 civilian, contractor and military personnel, is responsible for providing oceanographic products and services to all elements within the Department of Defense and is located at Stennis Space Center in south Mississippi. To request volunteers, science fair judges, classroom speakers or oceanography information, please call (228) 688-4002 or email shannon.breland@navy.mil.

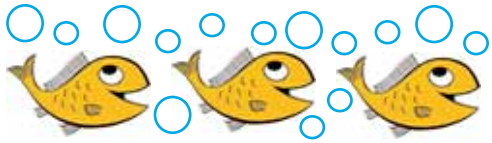
We want YOU for the Regional Ocean Sciences Bowl!

Represent your school at the 2007 Hurricane Bowl in Ocean Springs, Miss. Registration is free and everyone gets cool T-shirts and other goodies. Winners get a free trip to the national competition and runners-up win prizes like mp3 players and digital cameras. Call Sam Clardy with the University of Southern Mississippi at 228-818-8890.

Ocean Quiz

What is *acoustics*?

A. a science that deals with the production, control, transmission, reception, and effects of sound.



Oceanography: Try it!

A simple buoyancy experiment

Gather 2 grapes, 2 clear glasses, salt, hot water and a spoon (to dissolve salt).

1. Fill each glass with equal amounts of water.
2. Dissolve about 3 teaspoons of salt in one glass.
3. Place a grape in each glass.

The grape should float in the glass of saltwater and sink in the glass of plain tap water. (If the grape does not float, add more salt to the saltwater solution.) Why? When salt is dissolved in water, the water's density increases so that it exceeds the density of the grape.

To learn more, look up *Archimedes* and *buoyancy* on the Internet.